AMENDMENTS TO THE CLAIMS

Please rewrite the claims as follows:

1. (Currently Amended) A radiation image sensing apparatus ~~characterized by~~ for sensing a radiation by a sensing unit and outputting an electric signal corresponding to the sensed radiation, wherein said sensing unit comprising:

a substrate;

a conversion section ~~which is~~ arranged on said substrate ~~and has~~ and, configured to have a first semiconductor conversion element ~~that converts~~ for converting the radiation into an electrical signal and a switch element connected to ~~said~~ the first semiconductor conversion element, for switching the electrical signal; and

a second semiconductor conversion element ~~which is~~ arranged on said substrate ~~to detect a total dose of radiation incident on said conversion section and converts~~ , configured to convert the radiation into an electrical signal for detecting a dose of the radiation incident on said conversion section,

wherein ~~said~~ the first semiconductor conversion element and ~~said~~ the second semiconductor conversion element ~~have semiconductor layers formed from~~ are formed on the same layer on the substrate.

2. (Original) The apparatus according to claim 1, characterized in that said switch element has a semiconductor layer thinner than said semiconductor layer.

3. (Original) The apparatus according to claim 1, characterized in that each of said first and second semiconductor conversion elements has a MIS structure.

4. (Original) The apparatus according to claim 1, characterized in that said second semiconductor conversion element has a structure of a field effect transistor.

5. (Original) The apparatus according to claim 1, characterized in that each of said first and second semiconductor conversion elements has a PIN structure.

6. (Original) The apparatus according to claim 1, characterized by further comprising a wavelength conversion member which is arranged above said first and second semiconductor conversion elements to convert a wavelength of the radiation that becomes incident.

7. (Original) The apparatus according to claim 1, characterized in that said first and second semiconductor conversion elements are stacked above said switch element.

8. (Currently Amended) The apparatus according to claim 1, characterized by further comprising a bias line which is connected to a first electrode arranged for said first semiconductor conversion element ~~and a second electrode arranged for said second semiconductor conversion element~~.

9. (Original) The apparatus according to claim 1, characterized in that said switch element comprises a thin film transistor.

10. (Original) The apparatus according to claim 1, characterized in that said second semiconductor conversion element detects the total dose of the radiation.

11. (Currently Amended) The apparatus according to ~~claim 8~~ claim 9, characterized in that

said first semiconductor conversion element and said thin film transistor are arranged in a matrix on said substrate,

the first electrode is connected to one of a plurality of bias lines arranged in parallel, and

the second electrode is connected to the bias line to which the first electrode of said first semiconductor conversion element adjacent to said second semiconductor conversion element is connected.

12. (Currently Amended) The apparatus according to ~~claim 8~~ claim 11, characterized in that

there exist a first pixel which includes said first semiconductor conversion element and said second semiconductor conversion element and a second pixel which includes said first semiconductor conversion element and no second semiconductor conversion element,

an area of the first pixel is substantially equal to that of the second pixel, and

a light-receiving area of said first semiconductor conversion element in the first pixel is smaller than that of said first semiconductor conversion element in the second pixel.

13. (Original) The apparatus according to claim 12, characterized in that

a plurality of said second semiconductor conversion elements are placed in said conversion section, and

when an array of the first and second pixels which are arranged in a direction in which the bias line runs is defined as a row, and an array of the first and second pixels which are arranged in a direction perpendicular to the row is defined as a column, at least some of said plurality of second semiconductor conversion elements are formed in a plurality of second pixels which constitutes the same row or column.

14. (Original) The apparatus according to claim 8, characterized in that said second semiconductor conversion element has a structure of a field effect transistor which uses the second electrode as one of source and drain electrodes.

15. (Original) The apparatus according to claim 14, characterized in that at least one electrode selected from the group consisting of the other of the source and drain electrode of said second semiconductor conversion element and a control electrode is connected between a plurality of second pixels.

16. (Original) The apparatus according to claim 8, characterized in that said second semiconductor conversion element has a MIS structure having the second electrode.

17. (Original) The apparatus according to claim 16, characterized in that said second semiconductor conversion element has an electrode which sandwiches an insulating film and a semiconductor film with the second electrode and is connected between a plurality of second pixels.

18. (Original) The apparatus according to claim 8, characterized in that the second electrode has a transparent electrode film which comes into contact with the bias line.

19. (Original) The apparatus according to claim 8, characterized in that said second semiconductor conversion element has an ohmic contact layer which comes into contact with the bias line as the second electrode.

20. (Original) The apparatus according to claim 8, characterized in that said first semiconductor conversion element has a MIS structure having the first electrode.

21. (Original) The apparatus according to claim 8, characterized in that the first electrode has a transparent electrode film which comes into contact with the bias line.

22. (Original) The apparatus according to claim 8, characterized in that said first semiconductor conversion element has an ohmic contact layer which comes into contact with the bias line as the first electrode.

23. (Currently Amended) A radiation image sensing apparatus ~~characterized by~~ for sensing a radiation by a sensing unit and outputting an electric signal corresponding to the sensed radiation, wherein said sensing unit comprising:

a substrate;

a conversion section ~~which is~~ arranged on said substrate ~~and has~~ , configure to have a first photoconductive element, a capacitive element connected to ~~said~~ the first photoconductive element, and a switch element connected to ~~said~~ the capacitive element; and

a second photoconductive element ~~which is~~ arranged on said substrate ~~to detect a total dose of~~, configured to convert the radiation incident on said conversion section into an electrical signal for detecting a dose of the radiation,

wherein ~~said~~ the first photoconductive element and ~~said~~ the second photoconductive element ~~have photoconductive layers formed from~~ are formed on the same layer on the substrate.

24. (Original) The apparatus according to claim 23, characterized in that the photoconductive layer comprises one of an amorphous selenium layer and a gallium arsenide layer.

25. (Original) A method of manufacturing a radiation image sensing apparatus having

a substrate,

a conversion section which is arranged on the substrate and has a first semiconductor conversion element that converts radiation into an electrical signal and a switch element connected to the first semiconductor conversion element, and

a second semiconductor conversion element which is arranged on the substrate to detect a total dose of radiation incident on the conversion section and converts the radiation into an electrical signal, characterized by comprising the steps of:

forming the switch element on the substrate; and

forming a semiconductor layer of the first semiconductor conversion element and a semiconductor layer of the second semiconductor conversion element simultaneously from the same layer.

26. (Original) A method of manufacturing a radiation image sensing apparatus having

a substrate,

a conversion section which is arranged on the substrate and has a first photoconductive element, a capacitive element connected to the first photoconductive element, and a switch element connected to the capacitive element, and

a second photoconductive element which is arranged on the substrate to detect a total dose of radiation incident on the conversion section,

characterized by comprising steps of:

forming the switch element on the substrate; and

forming a photoconductive layer of the first photoconductive element and a photoconductive layer of the second photoconductive element from the same layer.

27. (Original) A method of driving a radiation image sensing apparatus having

a radiation source,

a substrate,

a conversion section which is arranged on the substrate and has a plurality of first semiconductor conversion elements that convert radiation into an electrical signal and a plurality of thin film transistors connected to the first semiconductor conversion elements,

a second semiconductor conversion element which is arranged on the substrate to detect a total dose of radiation incident on the conversion section and converts the radiation into an electrical signal, and

a bias line which is connected to a first electrode arranged for the first semiconductor conversion element and a second electrode arranged for the second semiconductor conversion element,

characterized by comprising steps of:

applying a bias to the second electrode to detect the total does of the radiation that becomes incident in the conversion section using the second semiconductor conversion element;

causing the radiation source to irradiate the conversion section with the radiation;

stopping radiation irradiation from the radiation source when the total dose reaches a predetermined value;

applying an operating voltage to a control electrode of the thin film transistor to read charges stored in the first semiconductor conversion element; and

applying a forward bias to semiconductor layers of the first semiconductor conversion element and the second semiconductor conversion element or reducing an electric field by a depletion bias of the semiconductor layers to remove charges remaining in the first semiconductor conversion element and the second semiconductor conversion element.